SERVICE MANUAL

BPM-1

PROFESSIONAL AUTOMATIC BEAT COUNTER

CONTENT'S:

Connections & Operations:.....Page 2-3

Specifications:.....Page 3

Parts Lists:.....Page 3-4

PCBs:.....Page 5-6

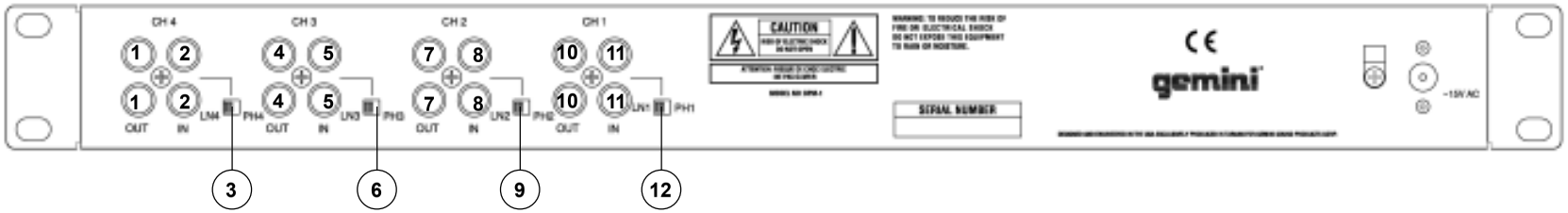
Schematics:.....Page 7

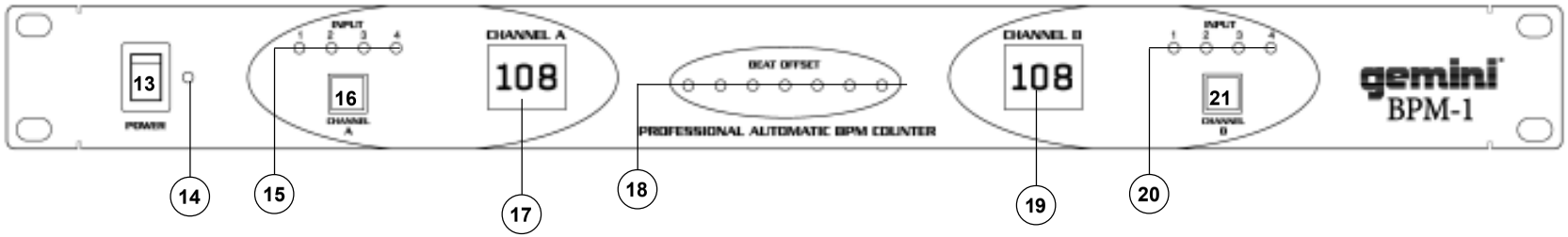
Gemini Sound Products Corp.

120 Clover Place P.O. Box 6928

Edison, NJ 08818-6928

732-738-9003 (Phone) • 732-738-9006 (Fax)


CH 4
CH 3
CH 2
CH 1
1
2
4
5
7
8
10
11
OUT
IN
LN4
PH4
LN3
PH3
LN2
PH2
LN1
PH1
CAUTION
SERIAL NUMBER
gemini
~15V AC
3
6
9
12


13
POWER
INPUT
1 2 3 4
16
CHANNEL A
CHANNEL A
108
BEAT OFFSET
PROFESSIONAL AUTOMATIC BPM COUNTER
CHANNEL B
108
INPUT
1 2 3 4
21
CHANNEL B
gemini
BPM-1
14
15
17
18
19
20

Connections

1. Make sure that the **POWER (13)** switch is in the off position. The **POWER LED (14)** will be off. This unit comes supplied with a 15 volt AC adaptor. Plug the adaptor into the rear panel power jack. Then plug the adaptor into a proper power source.
2. Use the 4 stereo **PHONO/LINE (2, 5, 8, 11)** inputs on the rear panel to connect to the output of your sources. The **PH1/LN1 (12)** switch enables you to set the **CHANNEL 1 (11)** input sensitivity to Phono or Line. The **PH2/LN2 (9)** switch enables you to set the **CHANNEL 2 (8)** input sensitivity to Phono or Line. The **PH3/LN3 (6)** switch enables you to set the **CHANNEL 3 (5)** input sensitivity to Phono or Line. The **PH4/LN4 (3)** switch enables you to set the **CHANNEL 4 (2)** input sensitivity to Phono or Line. Note: When using turntables, don't forget to connect the ground wire from your tuntable to the ground screw of your mixer.
3. The BPM-1 is supplied with 4 sets of **OUTPUT (1, 4, 7, 10)** jacks. If you are using a turntable and have the input set to phono, the corresponding output must be connected to **phono inputs on your mixer**. If you have the input set to line, the corresponding output must be connected to **line inputs on your mixer**. Use the **CHANNEL 1 OUTPUT (10)** jacks to connect to the appropriate inputs on your mixer. Use the **CHANNEL 2 OUTPUT (7)** jacks to connect to the appropriate inputs on your mixer. Use the **CHANNEL 3 OUTPUT (4)** jacks to connect to the appropriate inputs on your mixer. Use the **CHANNEL 4 OUTPUT (1)** jacks to connect to the appropriate inputs on your mixer.

Operation

1. POWER ON: Once you have made all the equipment connections, press **POWER (13)**. The power will turn on and the **POWER LED (14)** will glow RED. When you turn on the BPM-1, the unit will run through an initialization period in which the **BPM DISPLAYS (17, 19)** and the **BEAT OFFSET INDICATORS (18)** will flash. When the flashing stops, the unit is ready for use.
2. The **ASSIGN (16, 21)** buttons allow you to select which channel will be displayed on each side of the BPM-1. Press the **ASSIGN (16)** button to select channel 1, 2, 3 or 4 to be displayed on the left **BPM DISPLAY (17)**. The **ASSIGN LED (15)** will indicate the channel you selected. Press the **ASSIGN (21)** button to select channel 1, 2, 3 or 4 to be displayed on the right **BPM DISPLAY (19)**. The **ASSIGN LED (20)** will indicate the channel you selected.
3. BPM DISPLAY: There are **BPM DISPLAYS (17, 19)** for each side of the BPM-1. They update approximately every 2.5 seconds and digitally display the Beats Per Minute allowing you to match the beats visually. **BPM DISPLAY (17)** reflects the Beats Per Minute of the channel assigned to the left side of the unit, and **BPM DISPLAY (19)** reflects the Beats Per Minute of the channel assigned to the right side of the unit.

NOTE: A [- -] reading will appear on the BPM DISPLAY if the track has unclear beats. The [- -] reading will also appear if there is no signal present.

4. The **BEAT OFFSET INDICATORS (18)** light when the tracks of the two channels assigned to the crossfader are within 11 BPMs of each other and display how aligned the beats of the two channels are. When the RED LEDs light, the beats are not aligned. When the YELLOW LEDs light, the beats are almost aligned. When the GREEN LED lights, the beats are aligned perfectly.

NOTE: If the difference between the two channel's beats exceed 11 BPM, the BEAT OFFSET INDICATORS will not light.

SUGGESTION: You can use the BPM DISPLAYS to determine which tracks have similar or the same Beats Per Minute. When mixing two tracks with similar Beats Per Minute, you can use one source's pitch control to align the Beats Per Minute with the other source's BPM. The BPM DISPLAYS and the BEAT OFFSET INDICATORS update every 2.5 seconds and will reflect the change in BPM and indicate when the beats are aligned.

NOTE: Beat mixing is a skill that requires practice. Not every track has a strong beat, and beat mixing works best with tracks that have clear and strong beats.

Specifications

INPUTS:
Phono.....3 mV 3 MOhm
Line.....150 mV 3 MOhm

OUTPUTS:
Input/Output Resistance.....<0.1 Ohm

GENERAL:
BPM Range.....60 - 180 BPM
Power Adapter.....115V/15V AC 500 mA
230V/15V AC 500 mA
Dimensions.....19"w x 1.75"h x 3"d (483 x 44 x 78 mm)
Weight.....3 lbs (1.5 kg)

Parts Lists

Cabinet Parts and Packing

Item #	Description	Part #
1	CASE	031-032
2	CHASSIS	021-461
3	KNOB PUSH	002-571
4	HOLDER LED (3ø 6.5mm)	003-732
5	PLATE DISPLAY (SMALL)	003-372
6	CLIP WIRE	049-190
7	SERIAL NO. LABEL	196-061
8	GIFT BOX	255-131
9	OWNER'S MANUAL	157-962
10	BAND-HEAD TAPPING SCREW (TWIN)	110-166
11	BAND-HEAD TAPPING SCREW/TW-E	121-003A
12	BAND-HEAD TAPPING SCREW (TWIN)	110-172A
13	BAND-HEAD TAPPING SCREW ("NUT")	111-044A
14	BAND-HEAD TAPPING SCREW	111-046A
15	NUT/WASHER	131-057

Printed Circuit Boards

Item #	Description	Part #
1	PRINTED CIRCUIT BOARD BPM1-1	262-239
2	PRINTED CIRCUIT BOARD BPM1-2	262-240

Parts Lists - Meter PCB

ICs

Item #	Designators	Description	Part #
1	IC5	INTEGRATED CIRCUIT M66313FP	074-155
2	IC1	INTEGRATED CIRCUIT SC87C51CCN40	074-157

Electrical Parts

Item #	Designators	Description	Part #
1	A, B	LED NUMERIC DISPLAY	080-102
2	D1-2, D6-7, D20-27, D30	LIGHT EMITTING DIODE (RED) 3ø	080-003
3	D3, D5	LIGHT EMITTING DIODE (YELLOW) 3ø	080-062
4	D4	LED (GREEN) 3ø	080-063
5	SWA, SWB	TACT SWITCH	082-041
6	XT1	CERAMIC RESONATOR 12 MHz	052-018

Parts Lists - Main PCB

ICs

Item #	Designators	Description	Part #
1	IC2, IC3, IC4, IC8	INTEGRATED CIRCUIT UPC324	074-011
2	IC7	INTEGRATED CIRCUIT NJM7805FA	074-074

Electrical Parts

Item #	Designators	Description	Part #
1	D18	RECTIFIER DIODE 1N4002 (1N4003,1N4004)	079-027
2	D8-10, D12-14	SILICON DIODE 1N4148	079-003
3	J1-4	4P RCA JACK	161-169
4	SW1-4	SLIDE SWITCH 2P2C PH/LN	081-027

SERVICE MANUAL

BPM-1

PROFESSIONAL AUTOMATIC BEAT COUNTER

CONTENT'S:

Connections & Operations:.....Page 2-3

Specifications:.....Page 3

Parts Lists:.....Page 3-4

PCBs:.....Page 5-6

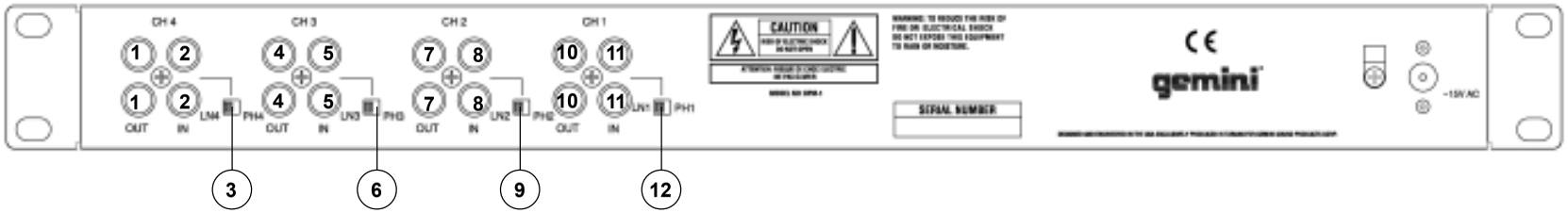
Schematics:.....Page 7

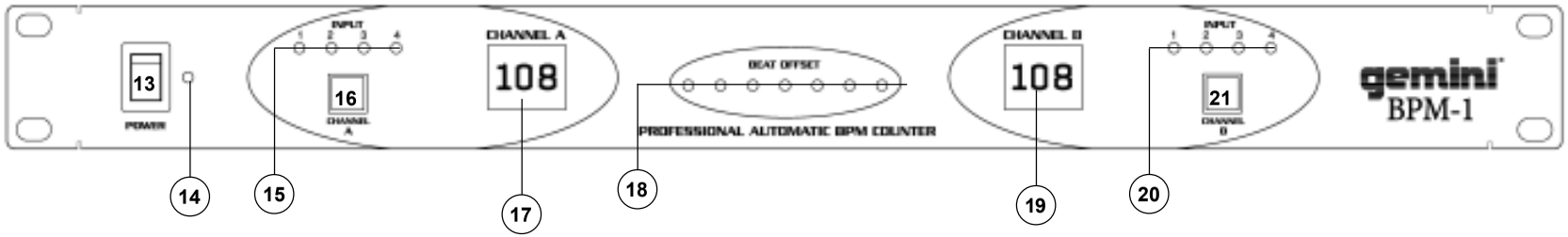
Gemini Sound Products Corp.

120 Clover Place P.O. Box 6928

Edison, NJ 08818-6928

732-738-9003 (Phone) • 732-738-9006 (Fax)


CH 4
CH 3
CH 2
CH 1
1
2
4
5
7
8
10
11
OUT
IN
LN4
PH4
LN3
PH3
LN2
PH2
LN1
PH1
CAUTION
SERIAL NUMBER
gemini
~15V AC
3
6
9
12


13
POWER
INPUT
1 2 3 4
16
CHANNEL A
CHANNEL A
108
BEAT OFFSET
PROFESSIONAL AUTOMATIC BPM COUNTER
CHANNEL B
108
INPUT
1 2 3 4
21
CHANNEL B
gemini
BPM-1
14
15
17
18
19
20

Connections

1. Make sure that the **POWER (13)** switch is in the off position. The **POWER LED (14)** will be off. This unit comes supplied with a 15 volt AC adaptor. Plug the adaptor into the rear panel power jack. Then plug the adaptor into a proper power source.
2. Use the 4 stereo **PHONO/LINE (2, 5, 8, 11)** inputs on the rear panel to connect to the output of your sources. The **PH1/LN1 (12)** switch enables you to set the **CHANNEL 1 (11)** input sensitivity to Phono or Line. The **PH2/LN2 (9)** switch enables you to set the **CHANNEL 2 (8)** input sensitivity to Phono or Line. The **PH3/LN3 (6)** switch enables you to set the **CHANNEL 3 (5)** input sensitivity to Phono or Line. The **PH4/LN4 (3)** switch enables you to set the **CHANNEL 4 (2)** input sensitivity to Phono or Line. Note: When using turntables, don't forget to connect the ground wire from your tuntable to the ground screw of your mixer.
3. The BPM-1 is supplied with 4 sets of **OUTPUT (1, 4, 7, 10)** jacks. If you are using a turntable and have the input set to phono, the corresponding output must be connected to **phono inputs on your mixer**. If you have the input set to line, the corresponding output must be connected to **line inputs on your mixer**. Use the **CHANNEL 1 OUTPUT (10)** jacks to connect to the appropriate inputs on your mixer. Use the **CHANNEL 2 OUTPUT (7)** jacks to connect to the appropriate inputs on your mixer. Use the **CHANNEL 3 OUTPUT (4)** jacks to connect to the appropriate inputs on your mixer. Use the **CHANNEL 4 OUTPUT (1)** jacks to connect to the appropriate inputs on your mixer.

Operation

1. POWER ON: Once you have made all the equipment connections, press **POWER (13)**. The power will turn on and the **POWER LED (14)** will glow RED. When you turn on the BPM-1, the unit will run through an initialization period in which the **BPM DISPLAYS (17, 19)** and the **BEAT OFFSET INDICATORS (18)** will flash. When the flashing stops, the unit is ready for use.
2. The **ASSIGN (16, 21)** buttons allow you to select which channel will be displayed on each side of the BPM-1. Press the **ASSIGN (16)** button to select channel 1, 2, 3 or 4 to be displayed on the left **BPM DISPLAY (17)**. The **ASSIGN LED (15)** will indicate the channel you selected. Press the **ASSIGN (21)** button to select channel 1, 2, 3 or 4 to be displayed on the right **BPM DISPLAY (19)**. The **ASSIGN LED (20)** will indicate the channel you selected.
3. BPM DISPLAY: There are **BPM DISPLAYS (17, 19)** for each side of the BPM-1. They update approximately every 2.5 seconds and digitally display the Beats Per Minute allowing you to match the beats visually. **BPM DISPLAY (17)** reflects the Beats Per Minute of the channel assigned to the left side of the unit, and **BPM DISPLAY (19)** reflects the Beats Per Minute of the channel assigned to the right side of the unit.

NOTE: A [- -] reading will appear on the BPM DISPLAY if the track has unclear beats. The [- -] reading will also appear if there is no signal present.

4. The **BEAT OFFSET INDICATORS (18)** light when the tracks of the two channels assigned to the crossfader are within 11 BPMs of each other and display how aligned the beats of the two channels are. When the RED LEDs light, the beats are not aligned. When the YELLOW LEDs light, the beats are almost aligned. When the GREEN LED lights, the beats are aligned perfectly.

NOTE: If the difference between the two channel's beats exceed 11 BPM, the BEAT OFFSET INDICATORS will not light.

SUGGESTION: You can use the BPM DISPLAYS to determine which tracks have similar or the same Beats Per Minute. When mixing two tracks with similar Beats Per Minute, you can use one source's pitch control to align the Beats Per Minute with the other source's BPM. The BPM DISPLAYS and the BEAT OFFSET INDICATORS update every 2.5 seconds and will reflect the change in BPM and indicate when the beats are aligned.

NOTE: Beat mixing is a skill that requires practice. Not every track has a strong beat, and beat mixing works best with tracks that have clear and strong beats.

Specifications

INPUTS:
Phono.....3 mV 3 MOhm
Line.....150 mV 3 MOhm

OUTPUTS:
Input/Output Resistance.....<0.1 Ohm

GENERAL:
BPM Range.....60 - 180 BPM
Power Adapter.....115V/15V AC 500 mA
230V/15V AC 500 mA
Dimensions.....19"w x 1.75"h x 3"d (483 x 44 x 78 mm)
Weight.....3 lbs (1.5 kg)

Parts Lists

Cabinet Parts and Packing

Item #	Description	Part #
1	CASE	031-032
2	CHASSIS	021-461
3	KNOB PUSH	002-571
4	HOLDER LED (3ø 6.5mm)	003-732
5	PLATE DISPLAY (SMALL)	003-372
6	CLIP WIRE	049-190
7	SERIAL NO. LABEL	196-061
8	GIFT BOX	255-131
9	OWNER'S MANUAL	157-962
10	BAND-HEAD TAPPING SCREW (TWIN)	110-166
11	BAND-HEAD TAPPING SCREW/TW-E	121-003A
12	BAND-HEAD TAPPING SCREW (TWIN)	110-172A
13	BAND-HEAD TAPPING SCREW ("NUT")	111-044A
14	BAND-HEAD TAPPING SCREW	111-046A
15	NUT/WASHER	131-057

Printed Circuit Boards

Item #	Description	Part #
1	PRINTED CIRCUIT BOARD BPM1-1	262-239
2	PRINTED CIRCUIT BOARD BPM1-2	262-240

Parts Lists - Meter PCB

ICs

Item #	Designators	Description	Part #
1	IC5	INTEGRATED CIRCUIT M66313FP	074-155
2	IC1	INTEGRATED CIRCUIT SC87C51CCN40	074-157

Electrical Parts

Item #	Designators	Description	Part #
1	A, B	LED NUMERIC DISPLAY	080-102
2	D1-2, D6-7, D20-27, D30	LIGHT EMITTING DIODE (RED) 3ø	080-003
3	D3, D5	LIGHT EMITTING DIODE (YELLOW) 3ø	080-062
4	D4	LED (GREEN) 3ø	080-063
5	SWA, SWB	TACT SWITCH	082-041
6	XT1	CERAMIC RESONATOR 12 MHz	052-018

Parts Lists - Main PCB

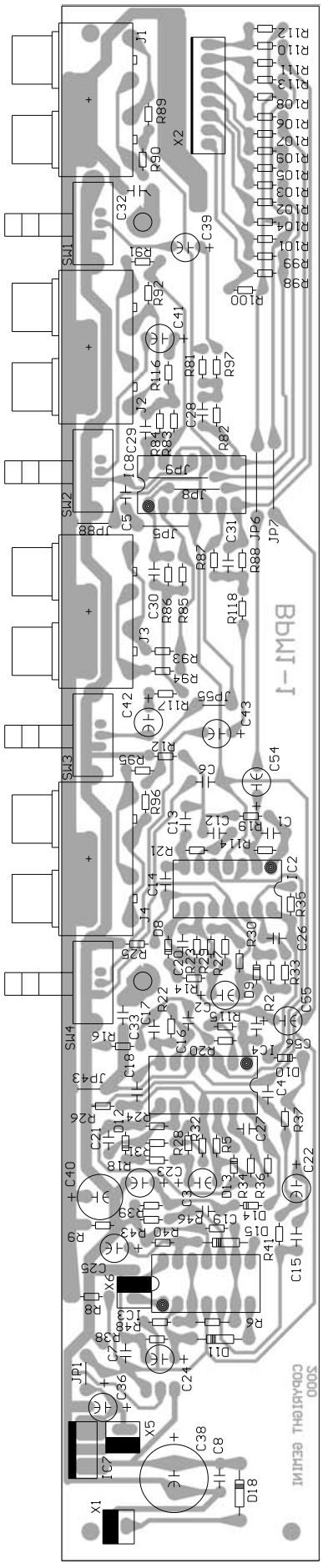
ICs

Item #	Designators	Description	Part #
1	IC2, IC3, IC4, IC8	INTEGRATED CIRCUIT UPC324	074-011
2	IC7	INTEGRATED CIRCUIT NJM7805FA	074-074

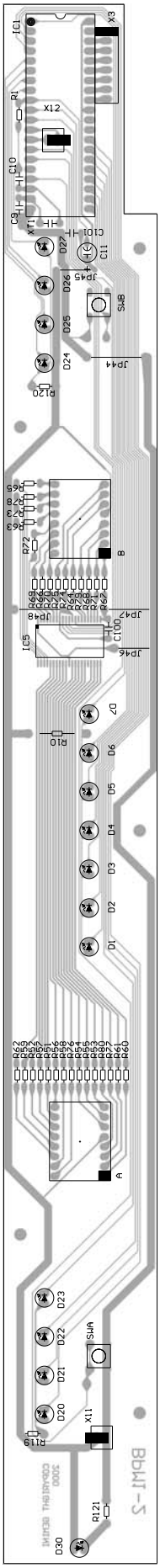
Electrical Parts

Item #	Designators	Description	Part #
1	D18	RECTIFIER DIODE 1N4002 (1N4003,1N4004)	079-027
2	D8-10, D12-14	SILICON DIODE 1N4148	079-003
3	J1-4	4P RCA JACK	161-169
4	SW1-4	SLIDE SWITCH 2P2C PH/LN	081-027

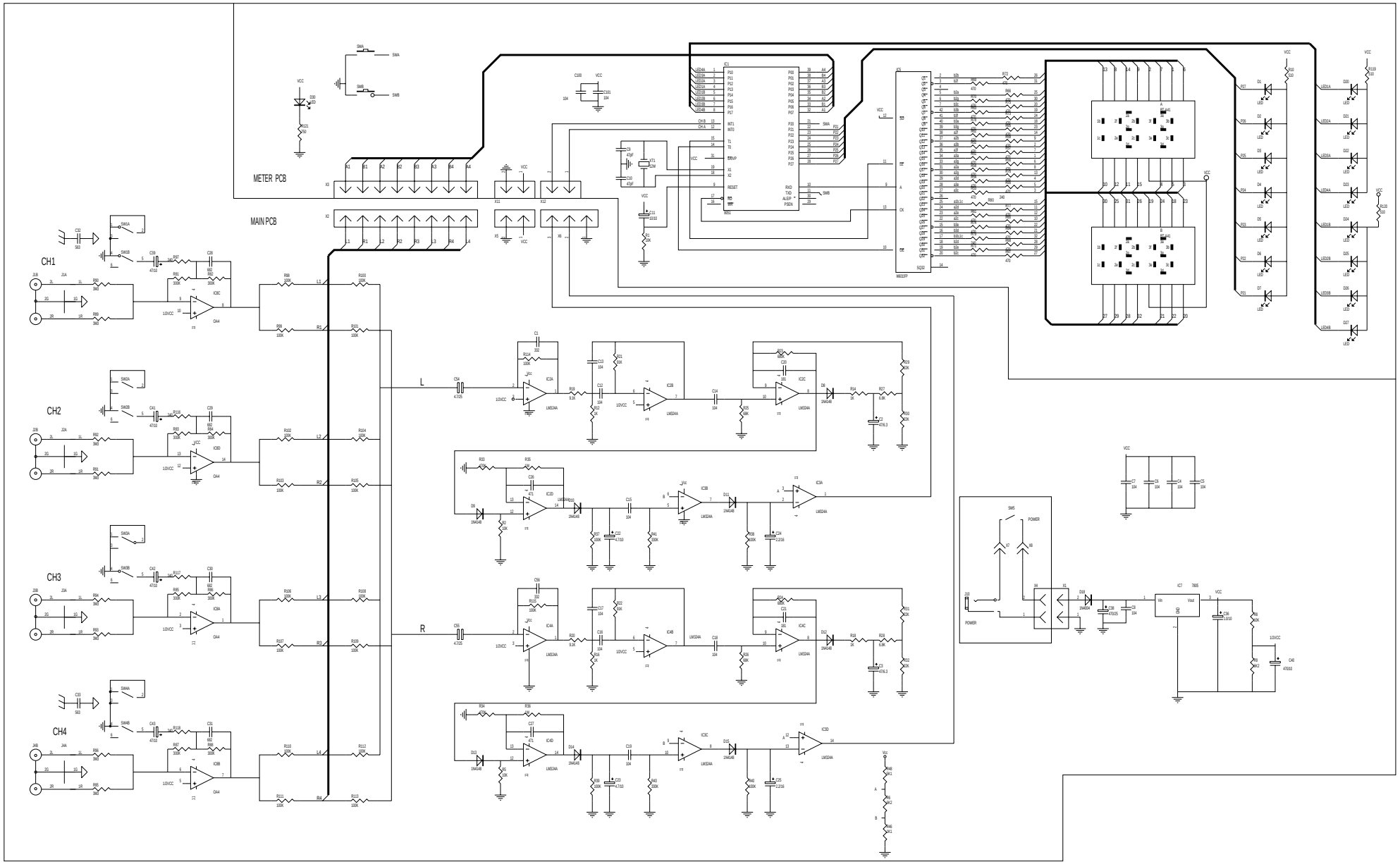
Main PCB



Meter PCB



Schematic



In the USA: If you experience problems with this unit, call 1-732-738-9003 for Gemini Customer Service.

Do not attempt to return this equipment to your dealer.

Parts of the design of this product may be protected by worldwide patents.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor. Gemini Sound Products Corp. shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual.

No part of this manual may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, electrical, mechanical, optical, chemical, including photocopying and recording, for any purpose without the express written permission of Gemini Sound Products Corp.

It is recommended that all maintenance and service on this product is performed by Gemini Sound Products Corp. or its authorized agents.

Gemini Sound Products Corp. will not accept liability for loss or damage caused by maintenance or repair performed by unauthorized personnel.

Worldwide Headquarters • 120 Clover Place, Edison, NJ 08837 • USA
Tel: (732) 738-9003 • Fax: (732) 738-9006

France • G.S.L. France • 11, Avenue Leon Harmel, Z.I. Antony, 92160 Antony, France
Tel: + 33 (0) 1 55 59 04 70 • Fax: + 33 (0) 1 55 59 04 80

Germany • Gemini Sound Products GmbH • Ottostrasse 6, 85757 Karlsfeld, Germany
Tel: 08131 - 39171-0 • Fax: 08131 - 39171-9

UK • Gemini Sound Products • Unit C4 Hazleton Industrial Estate, Waterlooville, UK P08 9JU
Tel: 087 087 00880 • Fax: 087 087 00990

Spain • Gemini Sound Products S.A. • Rosello, 516, Barcelona, Spain, 08026
Tel: 349-3435-0814 • Fax: 3493-347-6961

© Gemini Sound Products Corp. 2002 All Rights Reserved